

between the sponges and the other Cœlenterata. This boundary appears to be very artificial, if we consider that both among the Vermes and among the Mollusca there are particular forms with urticating organs. It is, however, still further weakened when we take a general view of the whole of the conditions of histological differentiation in the sponges and corals, and become convinced that in both classes a wide scope is given to the degree of differentiation. Not a few of the more highly developed sponges, with regard to histological differentiation, perhaps occupy a higher grade than many corals, or at least than the *Hydræ* among the Acælephs. On the other hand, a very important and thoroughgoing difference between the Acælephs and Sponges would result from the confirmation of the supposition expressed by me above, that zoospermia and consequently sexual differentiation do not occur among the sponges, and that the supposed "ova" of the sponges are agamic spores.

The further explanation and establishment of all the particulars here brought forward I reserve for my detailed monograph of the Calcispongiæ, and, in conclusion, beg all readers of this preliminary communication who may be in possession of dried or spirit specimens of Calcispongiæ to be kind enough to transmit them to me for examination and comparison, in order to render the systematic part of that work as complete as possible. The Calcispongiæ have hitherto been so sparingly represented in zoological collections almost everywhere, and their classification is so imperfect, that the following Prodrômus of a system of the Calcispongiæ must commence quite afresh. Moreover many Calcispongiæ are so very different in their internal structure, whilst their sober exterior appears almost the same, that the most accurate microscopic examination of all the forms hitherto discovered is quite indispensable for the establishment of their classification.

XIV.—*On a new Genus of the Madreporaria or Stony Corals* (Stenohelia). By WM. S. KENT, F.Z.S., F.R.M.S., of the Geological Department, British Museum.

In the 'Proceedings of the Zoological Society for 1862,' p. 196, J. Y. Johnson described as a new species of *Allopora* a small branching coral, of the family Oculinidæ, taken by himself in the vicinity of Madeira. There are, however, several points of structure connected with it, seemingly overlooked by Mr. Johnson, which render it perfectly essential that a new genus should be created for its reception.

The following are the characteristics of the new genus (for which I propose the name of *Stenohelia*), amended by recent observation:—

Corallum dendroid, flabelliform; surface of the cœnenchyma delicately striate. Calices all turned one way, pedunculate, compressed transversely to the axis of their peduncles. Septa equal, scarcely exsert. Columella styliform, deeply immersed. Pali rudimentary. Calicular fossa deep. Increasing somewhat irregularly by alternate distichal or subdichotomous gemmation. Ampullæ not essential, developed to a more or less considerable extent.

Stenohelia maderensis.

Allopora maderensis, J. Y. Johnson, Proc. Zool. Soc. p. 196, figs. 1, 2, 3, p. 197 (1862).

Corallum flabellate, the main stem somewhat irregularly and the ultimate ramifications alternate-distichal or dichotomously branching, occasionally, however, as many as three calices originating from the margin of the preceding one. Branches cylindrical, delicately striate, sometimes coalescing. Calices compressed, transversely ovate, pedunculate, all directed the same way, those on the main stem becoming gradually obscured by the outgrowth of the cœnenchyma. Septa scarcely exsert, twelve to sixteen in number, projecting but little into the calicular fossa. Calicular fossa very deep, having springing from its bottom a well-developed, styliform, pointed, and hirsute columella, surrounding which are traces of rudimentary pali. Ampullæ present in the shape of rounded elevations of the cœnenchyma studding the corallum on the opposite side to that on which the calices open, the surface of these elevations slightly echinulate. Long diameter of the calices measuring from $\frac{1}{20}$ to $\frac{1}{16}$ inch, the shorter averaging one-half of the same. Height of corallum of the single specimen in the British Museum $3\frac{1}{2}$ inches. Colour of the sclerenchyma pure opaque white.

Hab. Madeira.

The foregoing description differs essentially in two points from that given by Mr. Johnson,—in the first place, in the record of a well-developed columella, and, secondly, in that of the presence of ampullæ, both of which characters appear to have been entirely overlooked by the last-named writer. The columella, though deeply immersed and scarcely apparent, in every instance, to the unassisted eye, is very readily discernible with the aid of the pocket lens, the assistance of a low

power of the compound microscope, however, being requisite to define its hirsute character. The ampullæ, though sparingly scattered, are occasionally nearly globular, and of a size almost equalling in diameter that of the ramuscles which support them.

Mr. Johnson, in describing the species as *Allopora madeirensis*, considers it to possess a great general resemblance to *Stylaster flabelliformis*, and, being under the impression that it does not possess ampullæ, is of the opinion that this last circumstance indicates that the two genera *Allopora* and *Stylaster* should be united. Admitting the insufficiency of the presence or absence of these episclerenchymatous developments as a generic or even specific diagnostic (which fact I shall amply demonstrate in describing some new species of *Allopora* proper in a forthcoming catalogue of the Madrepores contained in the British Museum, now in course of publication), the alternate-distichal or entirely irregular nature of the gemmation which obtains in the two respective genera is alone an all-sufficient line of demarcation; and accordingly, of these two, Mr. Johnson's species is the more closely allied to *Stylaster*.

Mr. Johnson, again, suggests that this species may possibly be identical with the *Allopora infundibulifera* of Lamarck. Specimens of the last-named species in the National collection, however, prove it to be very distinct from that interesting form.

With regard to the true zoological affinities of *Stenohelia*, the pedunculated and transversely ovate calices all turning the same way, and the subdichotomous mode of gemmation frequently evinced, seem rather to indicate its close relationship to *Cryptohelia* of the West-African coast; it is, moreover, a remarkable and significant fact that in many instances the lower half of the calyx is as it were thrust in upon the calicinal fossa; and this may be accepted as a disposition towards the extreme modification in the same region which obtains in that genus, where we find that the inferior half is folded back so as to entirely conceal the calicular fossa. The close proximity of the habitats whence these two genera have been procured also carries with it a highly important significance.

The genus *Endohelia* of Milne-Edwards may possibly form the immediate intervening link connecting the two genera here compared. It is distinguished by having the inferior edge of the calices developed in a tongue-like form in front of the orifices, though to a less extent than in *Cryptohelia*; the surface of the cœnenchyma is smooth, and both columella and pali are deficient.

Stenohelia complanata.

Stylaster complanatus, Pourtales, Bulletin Mus. Comp. Zool. Cambridge, U. S. p. 115 (1867).

This species very closely approaches the preceding, and, except for its minute size, is scarcely distinguishable from it. Such was the opinion entertained on reading Pourtales's description; and a recent opportunity afforded me by Dr. Duncan, of consulting his type specimens, only confirmed me in the conclusion I had then arrived at.

XV.—*Notule Lichenologicae.* No. XXXII.

By the Rev. W. A. LEIGHTON, B.A., F.L.S., &c.

THE following Analytical Key is extracted from Dr. Ernst Stizenberger's "Monograph of *Lecidea sabuletorum*, Flörke, and the Lichens allied to it," in 'Acta Acad. Nat. Curios.' vol. xxxiv., and will be found serviceable to the student of that series of *Lecideæ* with fusiform spores.

- | | | |
|-----|---|-----|
| 1. | { Spores 6-many-celled | 2. |
| | { Spores (2-)4-celled | 27. |
| 2. | { Apothecia in section pale | 3. |
| | { Apothecia in section dark | 20. |
| 3. | { Apothecia without margin | 4. |
| | { Apothecia with persistent or evanescent margin | 12. |
| 4. | { Colour of apothecia constantly pale or varying from pale reddish to dark brown | 5. |
| | { Colour of apothecia constantly brown to black | 9. |
| 5. | { Apothecia 0·3 millim. in diameter | 6. |
| | { Apothecia 0·5 millim. in diameter | 7. |
| 6. | { Thallus leprose, pale; fruit grey to black. <i>L. cinerea</i> , Schær. (Exs., Hepp, 21). | |
| | { Thallus powdery, sap-green; fruit yellowish. <i>L. cinerea</i> , f. <i>hypoleuca</i> , Stizb. | |
| 7. | { Spores 4 mik.* broad. <i>L. cupreo-rosella</i> , Nyl. (Mass. 211, A, B; Hepp, 512; Zw. 269, A; Arn. 265). | |
| | { Spores 8 mik. broad | 8. |
| 8. | { Paraphyses compacted. <i>L. sabuletorum</i> , f. <i>Killiasii</i> , Hepp. | |
| | { Paraphyses free. <i>L. sabuletorum</i> , f. <i>subspheroides</i> , Nyl. | |
| 9. | { Apothecia 0·3 millim. in diameter | 10. |
| | { Apothecia 0·4–0·6 millim. in diameter | 11. |
| 10. | { Spores 40 mik. long. <i>L. chlorococca</i> , Græwe (Stenh. 170). | |
| | { Spores 26 mik. long. <i>L. chlorococca</i> , v. <i>brachysperma</i> , Stizb. | |
| 11. | { Hypothecium pale. <i>L. sabuletorum</i> , v. <i>miliaria</i> , Fr. (Zw. 121; Leight. 210; Anzi, Langob. 148; Mudd, 156, 158; Rabh. 322, 603). | |
| | { Hypothecium brownish. <i>L. sabuletorum</i> , v. <i>miliaria</i> , f. <i>scoliosporioides</i> , Bagl. | |

[* The "mik." probably = $\frac{1}{1000000}$ of an inch.] 9*